AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A digital down-converter for converting a frequency of a digital signal, received at a radio receiver and sampled with a radio frequency (RF) or an intermediate frequency (IF), to a detection frequency for a detection process, comprising:

a first mixer for converting and outputting a frequency of the ~~received~~digital signal to a frequency of a first IF signal by multiplying the digital signal by a real signal;

a decimation filter for suppressing unwanted components among the frequency of the first IF signal from the first mixer; ~~and~~

a second mixer for converting the frequency of the first IF signal having only wanted components outputted by the decimation filter to a second IF signal of the detection frequency, and outputting the second IF signal as a complex~~ed~~ signal by multiplying the output of the decimation filter by a complex local signal.

2. (Original) The digital down-converter as claimed in claim 1, wherein a frequency of the first IF signal is 1/4 a sampling frequency.

3. (Previously Presented) The digital down-converter as claimed in claim 2, further comprising an automatic gain control (AGC) amplifier for amplifying an output of the decimation filter and inputting the amplified output to the second mixer.

4. (Previously Presented) The digital down-converter as claimed in claim 2, wherein the second mixer further comprises a multiplier for multiplying the output of the decimation filter by a certain ratio of a sampling frequency and a decoding means for decoding the multiplied signal through the multiplier.

5. (Currently Amended) A receiver comprising:

a digital down-converter including a first mixer for converting a frequency of a received digital signal, sampled with a radio frequency (RF) or an intermediate frequency (IF), to a frequency of a first IF signal by multiplying the digital signal by a real signal, and a second mixer for

converting the first IF signal converted by the first mixer to a second IF signal of a detection frequency for a detection process and then outputting the second IF signal as a complexed signal by multiplying the first IF signal by a complex local signal;

a radio receiver for receiving an input signal and providing the received signal to the digital down-converter for frequency conversion;

a filter for attenuating an aliasing frequency component and an image frequency component of the first mixer in the digital down-converter, from an output of the radio receiver; and

an analog-to-digital converter for sampling an output of the filter with a radio frequency or an intermediate frequency and providing the sampled signal to the digital down-converter.

6. (Original) The receiver as claimed in claim 5, wherein a frequency of the first IF signal is 1/4 a sampling frequency.

7. (Original) The receiver as claimed in claim 6, further comprising an automatic gain control (AGC) amplifier for amplifying an output of the first mixer of the digital down-converter.

8. (Original) The receiver as claimed in claim 6, wherein the second mixer of the digital down-converter is constructed in a polyphase structure comprised of a decimation filter and a quadrature converter.

9. (Previously Presented) The second mixer as claimed in Claim 3, further comprising:

a multiplier for multiplying the output of the automatic gain control (AGC) by a certain ratio of a sampling frequency and a decoding means for decoding the multiplied signal through the multiplier.

10. (Previously Presented) The second mixer as claimed in Claim 2, further comprising:

a first selector for inputting the output of the decimation filter and cyclically selecting a multiplication value among cosine wave values of the local signal; and

a second selector for inputting the output of the decimation filter and cyclically selecting a multiplication value among sine wave values of the local signal.

11. (Previously Presented) The second mixer as claimed in Claim 3, further comprising:

a first selector for inputting the output of the automatic gain control (AGC) and cyclically selecting a multiplication value among cosine wave values of the local signal; and

a second selector for inputting the output of the automatic gain control (AGC) and cyclically selecting a multiplication value among cosine wave values of the local signal.

12. (Previously Presented) The second mixer as claimed in Claim 10, wherein the first selector has multiplication values among cosine wave values as 1, 0, -1 and 0, outputs a multiplication result corresponding to a multiplication value '1', outputs a multiplication result corresponding to '-1' by inversion, and a multiplication result '0' corresponding to a multiplication value '0'.

13. (Previously Presented) The second mixer as claimed in Claim 11, wherein the first selector has multiplication values among cosine wave values as 1, 0, -1 and 0, outputs a multiplication result corresponding to a multiplication value '1', outputs a multiplication result corresponding to '-1' by inversion, and a multiplication result '0' corresponding to a multiplication value '0'.

14. (Currently Amended) The second mixer as claimed in Claim 11 ~~10~~, wherein the first selector has multiplication values among cosine wave values as 1, 0, -1 and 0, outputs a multiplication result corresponding to a multiplication value '1', outputs a multiplication result corresponding to '-1' by inversion, and a multiplication result '0' corresponding to a multiplication value '0'.

15. (Currently Amended) The second mixer as claimed in Claim 10 ~~11~~, wherein the first selector has multiplication values among cosine wave values as 1, 0, -1 and 0, outputs a multiplication result corresponding to a multiplication value '1', outputs a multiplication result corresponding to '-1' by inversion, and a multiplication result '0' corresponding to a multiplication value '0'.

16. (Currently Amended) A digital down-converter for converting a frequency of a signal, received at a radio receiver and sampled with a radio frequency (RF) or an intermediated frequency (IF), to a detection frequency for a detection process, comprising:

a first mixer for converting and outputting a frequency of the received signal to a frequency of a first IF signal by multiplying the digital signal by a real signal; and

a second mixer for dividing the frequency of the first IF signal into a cosine part and a sine part and processing the cosine part and the sine part [[it]] with a polyphase structure for converting and decoding to the frequency of a ~~the~~ second IF signal by multiplying the first IF signal by a complex local signal.

17. (Previously Presented) The digital down-converter as claimed in Claim 16, wherein a frequency of the first IF signal is ¼ a sampling frequency.

18. (Previously Presented) The digital down-converter as claimed in Claim 17, further comprising an automatic gain control (AGC) amplifier for amplifying of the output of the first mixer and inputting the amplified output to the cosine part and the sine part of the second mixer.

19. (Previously Presented) The second mixer as claimed in Claim 17, further comprising a selector for selecting and inverting two decimation filter and signal for suppressing an unwanted signal of respectively inputted signals.